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Flight Standardization Board (FSB) Report

Revision: 8
Date: 08/17/2016

Manufacturer

Embraer S.A.

Type Certification Data Sheet
T00011AT

TCDS Identifiers
EMB-145, EMB-145ER, EMB-145MR, EMB-145LR, EMB-135ER, EMB-135LR, EMB-135KE, EMB-135KL, EMB-135BJ, EMB-145XR, EMB-145MP, EMB-145EP

Pilot Type Rating
EMB-145

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RECORD OF REVISIONS

Revision Number	Sections	Date
1	ALL	06/30/1999
2	ALL	09/30/1999
3	ALL	06/12/2001
4	ALL	06/26/2002
5	ALL	04/20/2011
6	Appendix 1 and 2	06/13/2013
7	Appendix 2	07/21/2014
8	ALL	08/17/2016

Highlights of Change:

All Sections
Minor editorial changes on every page for clarity, consistency, standardization, updated terminology, acronyms and United States Workforce Rehabilitation Act Section 508 compliancy.

Appendix 3
3.1.5 Final Landing Flap Setting Clarification

Appendix 5
5.2.5 Seat-Dependent Element Updates

Appendix 6
6.2.1.1 Unique Training Provisions Update

TABLE OF CONTENTS

SECTION **PAGE**

1. PURPOSE AND APPLICABILITY

1.1 This Flight Standardization Board (FSB) report specifies master training, checking, and currency requirements applicable to crews operating aircraft under the pertinent Title 14 of the Code of Federal Regulations (14 CFR). Provisions of this report:

a) Identify Pilot "type rating" requirements assigned to the EMB-135/145;

b) Describe any unique requirement applicable to initial, transition, upgrade, or recurrent training;

c) Describe "Master Difference Requirements (MDR)" for flight crews requiring differences qualification for mixed-fleet-flying or transition;

d) Provide examples of acceptable "Operator Difference Requirements (ODR)" tables;

e) Describe acceptable training program and training device characteristics when necessary to establish compliance with applicable MDRs;

f) Identify checking and currency standards to be applied by the Federal Aviation Administration (FAA) or operators; and

g) Provide a listing of regulatory compliance status (compliance checklist) for the pertinent 14 CFR, Advisory Circulars (AC), and other operationally related criteria that was reviewed and evaluated by the Aircraft Evaluation Group (AEG).

Note: All regulatory references within this report are found in 14 CFR unless otherwise indicated.

1.2 This report addresses EMB-135/145 series aircraft as specified in the FAA Type Certificate Data Sheet (TCDS).

1.3 The provisions of this FSB report are effective until amended, superseded, or withdrawn by subsequent revisions to this report.

1.4 Determinations made in this report are based on the evaluations of specific series aircraft equipped in a given configuration and in accordance with current regulations and guidance. Modifications and upgrades made to the models described herein, or introduction of new related aircraft, may require amendment of the findings in this report. The FSB reserves responsibility/authority to re-evaluate and modify sections of this report on new or revised AC material or the pertinent 14 CFR, aircraft operating experience, or the testing of new or modified aircraft under the provisions of AC 120-53, Guidance for Conduction and Use of Flight Standardization Board Evaluations, as amended.

1.5 Relationship between this FSB report and an Advanced Qualification Program (AQP): Order 8900.1 contains policy regarding an AQP and differences from the FSB report. Differences between this FSB report and an operator's proposed training, checking, and currency requirements under an AQP must be justified and documented as part of the applicant's AQP approval process. Program approvals under AQP need to ensure the basic provisions and requirements of this report have been addressed and, where necessary, coordination with the appropriate Flight Standardization Board has been completed.

1.6 Terminology. The term "must" is used in this FSB report and certain MDR footnotes even though it is recognized that this report (as well as AC 120-53, as amended, on which it's based) provides one acceptable means, but not necessarily the only means, of compliance with the pertinent 14 CFR requirements. This terminology acknowledges the need for operators to fully comply with this FSB report, the MDR, and ODR provisions of AC 120-53, as amended, and are to be used by the operator as the means of complying with the pertinent 14 CFRs. Operators who choose this method must comply with each applicable MDR provision, including any footnotes.

1.7 Unless otherwise specified, EMB-145 means the EMB-145 (STD), EMB-145XR, EMB-145MP, EMB-145EP, EMB-145ER, EMB-145EU, EMB-145LU, EMB-145MK, and EMB-145LR throughout this report. Unless otherwise specified, EMB-135 means the EMB-135ER, EMB-135LR, EMB-135KE, EMB-135KL, and EMB-135BJ throughout this report. The EMB-145 (STD), EMB-145ER, EMB-145MR, and EMB-145LR are often commercially referred to as the ERJ-145 (STD), ERJ-145ER, ERJ-145MR, and ERJ-145LR respectively. The EMB-135ER and EMB-135LR are often commercially referred to as the ERJ-135ER and ERJ-135LR respectively. The EMB-135KE and EMB-135KL are often commercially referred to as the ERJ-140ER and ERJ-140LR respectively. The EMB-135BJ is marketed under the Legacy 600 and Legacy 650 names.

1.8 This report includes:

a) Minimum requirements for approval by FAA field offices, (e.g., MDRs, Type Rating designations),

b) General advisory information which may be approved for that operator (e.g., MDR footnotes, acceptable ODR tables), and

c) Information which is used to facilitate FAA review of an aircraft type or related aircraft that is proposed for use by an operator (e.g., compliance checklist).

Various sections of this report are qualified as to whether compliance (considering the provisions of FAA AC 120-53, as amended) is required or is advisory in nature.

1.9 Acronyms are defined as follows:

AC	Advisory Circular
ACO	Aircraft Certification Office
ADC	Air Data Computer
ADF	Automatic Direction Finder
ADS	Air Data
ADS-B	Automatic Dependent Surveillance–Broadcast
AEG	Aircraft Evaluation Group
AFM	Airplane Flight Manual
AFS	Flight Standards Service
AFS-200	Flight Standards Service, Air Transportation Division
AGL	Above Ground Level
AMM	Aircraft Maintenance Manual
ANP	Actual Navigation Performance
AOM	Airplane Operations Manual
AP	Autopilot
APU	Auxiliary Power Unit
AQP	Advanced Qualification Program
ASC	Aircraft Service Change
ATC	Air Traffic Control
ATP	Airline Transport Pilot Certificate
AVS	Aviation safety Organization
AWU	Aural Warning Unit
CAMP	Continuous Airworthiness Maintenance Program
CAT	ILS Category Operation
CCD	Cursor Control Device
CFIT	Controlled Flight Into Terrain
CFR	Code of Federal Regulations
14 CFR	Title 14 of the Code of Federal Regulation
CHDO	Certificate Holding District Office
CNS	Communications, Navigation and Performance
CPDLC	Controller Pilot Data Link Communications
CPM	Corrosion Prevention Manual
CVR	Cockpit Voice Recorder
DC	Display Controller
DDPM	Dispatch Deviations Procedures Manual
DH	Decision Height
DME	Distance Measuring Equipment
DOD	Department Of Defense
ECAM	Electronic Centralized Aircraft Monitoring
EDM	Emergency Descent Maneuver
EEC	Emergency Evacuation Crewmember
EFB	Electronic Flight Bag

EFIS	Electronic Flight Instrument System
EFVS	Enhanced Flight Vision System
EGPWS	Enhanced Ground Proximity Warning System
EICAS	Engine Indication and Crew Alerting System display
ELT	Emergency Locator Transmitter
EMB	Embraer S.A
ETSO	European TSO
EVS	Enhanced Vision System
EVS II	Enhanced Vision System (Second Generation EVS)
FAA	Federal Aviation Administration
FADEC	Full Authority Digital Engine Control
FANS	Future Air Navigation System
FCU	Fuel Control Unit
FDR	Flight Data Recorder
FFS	Full Flight Simulator (Level A or Higher)
FGS	Flight Guidance System
FL	Flight Level
FMA	Flight Mode Annunciator
FMS	Flight Management System
FSB	Flight Standardization Board
FSTD	Flight Simulator and Training Devices
FTD	Flight Training Device (Level 4-6)
GAC	Gulfstream Aerospace Corporation
GND	Ground
GPS	Global Positioning System
GS	Glide Slope
HF	High Frequency
HUD	Head Up Guidance Display
IFE	In-Flight Entertainment
IFR	Instrument Flight Rules
ILS	Instrument Landing System
I-NAV	Integrated Navigation Display
IRS	Inertial Reference System
ISIS	Integrated Standby Instruments System
LOC	Localizer
LOE	Line Operational Evaluation
LOFT	Line Orientated Flight Training
MB	Marker Beacon
MCDU	Multi-Function Control Display Units
MDA	Minimum Descent Altitude
MDR	Master Differences Requirements
MEL	Minimum Equipment List
MFD	Multi-Function Display
MFF	Mixed Fleet Flying

MMEL	Master Minimum Equipment List
MMO	Maximum Mach Operating Speed
MNPS	Minimum Navigation Performance Specifications
MPG	Maintenance Planning Guide
MSL	Mean Sea Level
NAT MNPS	North Atlantic MNPS
ND	Navigation Display
NDB	Non-Directional Radio Beacon
NDI	Non Destructive Inspection Manual
NSP	National Simulator Program
ODR	Operator Differences Requirements
OE	Operating Experience
PFD	Primary Flight Display
PIC	Pilot In Command
POI	Principal Operations Inspector
PSI	Pounds Force Per Square Inch
PTS	Practical Test Standards
QRH	Quick Reference Handbook
RAAS	Runway Awareness Advisory System
RFMU	Radio Frequency Management Unit
RMS	Radio Management System
RMU	Radio Management Unit
RNP	Required Navigation Performance
RNP-AR	Required Navigation Performance – Authorization Required
RVSM	Reduced Vertical Separation Minima
SIC	Second In Command
SEA-AEG	Seattle Aircraft Evaluation Group
SFAR	Special Federal Aviation Regulations
SOE	Supervised Operating Experience
SV PFD	Synthetic Vision Primary Flight Display
TAWS	Terrain Awareness and Warning System
TCAS	Traffic alert and Collision Avoidance System
TCDS	Type Certification Data Sheet
TCE	Training Center Evaluator
TCPM	Training Center Program Manager
TSO	Technical Standard Order
UPRT	Upset Prevention and Recovery Training
VFR	Visual Flight Rules
VGS	Visual Guidance System
VHF	Very High Frequency
VNAV	Vertical Navigation
VOR	VHF Omni-directional Range
VREF	Reference Landing Speed
WOW	Weight on Wheels

2. PILOT "TYPE RATING" REQUIREMENTS

2.1 Type Rating. In accordance with the provisions of parts 1, 61, and 121, and AC 120-53, as amended, the specific pilot type rating assigned to the EMB-135/145, along with all the variations of the EMB-135/145 aircraft, is designated "EMB-145".

2.2 Second-In-Command (SIC) Type Rating. In accordance with the provisions of 14 CFR, FAA Order 8900.1, Flight Standards Information Management System, and AC 120-53, as amended, a SIC pilot type rating is assigned to the EMB-135/145 aircraft and is designated "EMB-145" with Limitation for "EMB-145 SIC Privileges Only".

3. "MASTER DIFFERENCE REQUIREMENTS" (MDR)

3.1 Common Requirements for all airplanes.

3.1.1 Autopilot Engage Altitudes. As referenced by approved AFMs, the EMB-145 has specifically been evaluated for autopilot suitability for engagement at or above 500 feet AGL during takeoff.

3.1.2 Minimum Altitude for Autopilot Use – Non-Precision Approaches. The EMB-145 has specifically been evaluated for autopilot suitability for use during non-precision approaches. The autopilot must be disengaged before the airplane descends below Minimum Descent Altitude (MDA) on a non-precision approach with the autopilot engaged.

3.1.3 Minimum Altitude for Autopilot Use – Precision Approaches. The EMB-145 has specifically been evaluated for autopilot suitability for use during Instrument Landing System (ILS) precision approaches. The autopilot must be disengaged before the airplane descends below 200 feet AGL when it is coupled to an ILS glideslope and localizer unless it is in the go-around mode.

3.1.4 Landing Minima Categories 14 CFR. All operators must comply with and use an approach category appropriate to the speed of VREF. Certificate holders may be further restricted by their operations specifications for circling approaches.

3.1.5 Normal "Final Landing Flap Setting". The normal "Final Landing Flap Setting" may be either "flaps 22" or "flaps 45" for all EMB-145 models. An assessment must be performed in order to evaluate the best option between flaps 22 and flaps 45 for every landing. The performance data for landing can be obtained from the airplane flight manual. The actual landing performance of the aircraft is affected by many variables which must be taken into account.

3.2 Master Difference Requirements.

3.2.1 Requirements for particular EMB-135/145 Related Aircraft Combinations. MDRs for related aircraft of the EMB-135/145 are shown in Appendix 1. These provisions apply when differences between related aircraft exist which affect crew knowledge, skills, or abilities related to flight safety (e.g., Level A or greater differences).

3.2.2 MDR Footnotes. Footnotes to MDR requirements define acceptable "required means" or "alternate means" of compliance. A footnote can indicate requirements that are less restrictive than the basic designation, or more restrictive than the basic designation, depending on the significance of the differences between related aircraft.

4. ACCEPTABLE "OPERATOR DIFFERENCE REQUIREMENTS" (ODR) TABLES

4.1 ODR Tables. ODR tables are used to show an operator's compliance method. ODR tables for operators conducting mixed fleet operations, using the particular combination of variations evaluated, are available in Appendix 2. The ODR tables represent an acceptable means to comply with MDR provisions based on those differences and compliance methods shown. The tables do not necessarily represent the only acceptable means of compliance for operators with airplanes having other differences, where compliance methods (e.g., FSTDs) are different. For operators flying variations, which are the same as the aircraft used for the ODR table development, and using the same compliance methods, the ODR tables provided in Appendix 2 have been found acceptable, and therefore, may be approved by a POI for a particular operator.

4.2 Operator Preparation of ODR Tables. Operators flying a "mixed fleet" of and other related aircraft must have approved ODR tables pertinent to their fleet.

4.3 ODR Table Coordination. Unless identical or equivalent ODR tables have been previously approved by the FAA, new ODR tables proposed by operators should be coordinated with the FSB prior to FAA approval and implementation. FSB coordination ensures consistent treatment of related aircraft between various operators, and compatibility of each ODR table with MDR provisions.

4.4 ODR Table Distribution. Original FAA-approved ODR tables are to be retained by the operator. Copies of FAA-approved ODR tables are to be retained by the Certificate Holding District Office (CHDO) and should be provided to the FSB Chair at the Seattle Aircraft Evaluation Group (SEA-AEG).

5. FSB SPECIFICATIONS FOR TRAINING

5.1 General

5.1.1 Assumptions Regarding Airmen's Previous Experience. The provisions of this section apply to programs for airmen who have experience in pertinent air carrier operations and multi-engine transport turbojet aircraft, including glass cockpit and FMS experience. For airmen not having this experience, additional requirements may be appropriate as determined by the POI, FSB, and/or AFS-200.

5.1.2 Training for Seat-Dependent Tasks. Accomplishment of certain tasks, procedures, or maneuvers requires training of a crewmember for a particular crew position (e.g., captain, first officer, international relief officer, check pilot). Training programs must recognize and address the necessary seat/position related tasks for the applicable crewmember. Accordingly, training programs must address seat-dependent tasks or maneuvers to the extent necessary to satisfy crew qualification objectives and must be in accordance with ODR tables when applicable.

5.1.3 Second-In-Command (SIC) Training Tasks. Flight crews qualify to serve as SIC must accomplish certain tasks, procedures, or maneuvers for the SIC crew position. Training programs must address all training elements in accordance with this report, pertinent 14 CFR, and FAA Order 8900.1.

5.1.4 Future Air Navigation Systems (FANS) (e.g., RNP, ANP, CNS, CPDLC, and ADS). Flight crews operating aircraft equipped with FANS software must receive appropriate instruction in its general operational functions, appropriate uses for areas of operation, routes, or procedures to be flown. General training must address communications, navigation, and surveillance (CNS) functions covered by FANS, RNP, and ANP. In addition, sufficient training in use of data link communication and Automatic Dependent Surveillance (ADS) to ensure adequate knowledge, skill, and proficiency for flight crews to operate the above system(s) in typical daily operations (requiring their use) must be provided.

5.1.5 EMB-135/145 Full Course programs. Principal Inspectors for operators initially introducing an EMB-135/145 type may approve programs consistent with programs previously approved. For information regarding previously approved programs, FAA Principal Inspectors for other existing EMB-135/145 operators may be consulted. In the event of uncertainty regarding evaluation of a proposed program, the FSB should be consulted.

5.2 Pilots Initial, Transition, and Upgrade Training

5.2.1 Pilots Initial, Transition, and Upgrade Ground Training. Initial, transition, or upgrade ground training for the EMB-135/145 is accomplished in accordance with pertinent 14 CFR (e.g., 14 CFR §121.419 and §135.345). No unique provisions or requirements are

specified. Training program hours may be reduced as specified in accordance with pertinent 14 CFR.

5.2.2 Pilots Initial, Transition, and Upgrade Flight Training. Initial, transition, or upgrade flight training for the EMB-135/145 is accomplished as specified in accordance with pertinent 14 CFR. No unique provisions or requirements are specified. Training program hours may be reduced as specified in accordance with pertinent 14 CFR.

5.2.3 Crewmember Emergency Training. Crewmember emergency training must be conducted for the EMB-135/145 in accordance with pertinent 14 CFR. The objective of emergency training for the EMB-135/145 aircraft is to provide crewmembers with the necessary knowledge concerning emergency equipment, situations, and procedures to ensure implementation of the correct actions in the event of an emergency.

Emergency training consists of instruction on the location, function, and operation of emergency equipment that is different in each related aircraft of the EMB-135/145 and from other aircraft in the operator's fleet. Where emergency equipment is common, instruction may be adjusted for crewmembers qualified and current on this equipment, provided records are available which demonstrate that crewmembers meet pertinent 14 CFR requirements. For example, if the fire extinguishers are common to fire extinguishers on other aircraft in the operator's fleet, training may be simultaneously credited for both aircraft. Conversely, for equipment that is unique to the EMB-135/145, training on the emergency equipment for each related aircraft is required.

Emergency training also consists of instruction in crewmember emergency assignments and procedures including crew coordination and communication, the handling of emergency or other unusual situations, and emergency performance and observation drills that are specific to each related aircraft of the EMB-135/145.

In accordance with pertinent 14 CFR and FAA Order 8900.1, emergency training requirements refer to two types of training: "general" emergency training and "aircraft-specific" emergency training. General emergency training is instruction on those emergency items that are common to the EMB-135/145 and all aircraft in the operator's fleet (e.g., instruction on fire extinguishers and firefighting procedures) if common to all aircraft. Aircraft-specific emergency training is training on those items that are specific to the EMB-135/145 aircraft. An example of aircraft-specific emergency training is instruction on the location of emergency equipment for each related aircraft of the EMB-135/145 aircraft.

As part of an approved training program, an operator may use many methods when conducting aircraft-specific emergency training, including classroom instruction, pictures, videotape, ground training devices, computer-based instruction, and static aircraft training.

There are no specified training program hours for Crewmember Emergency Training. A chart addressed in FAA Order 8900.1 provides “national norms” for the approval of the general emergency training program hours. The complexity of the different related aircraft of the EMB-135/145 and the complexity of the type of operation to be conducted must be considered when approving the EMB-135/145 aircraft-specific emergency training.

5.2.4 Areas of Emphasis. The following areas of emphasis must be addressed during ground and flight training (examples follow):

a) The engine indication and crew alerting system (EICAS), the primary flight displays (PFDs), and multifunction displays (MFDs). Altitude and airspeed are presented on vertical scale instruments in both digital and analog formats. Pilots need to be able to understand the multitude of information presented on these displays. Pilots transitioning from traditional round dial basic “T” instruments may require additional training and instrument scan practice to gain proficiency in manually flying by reference to the PFD. Recognition of reversionary modes and display failures and appropriate corrective action to be taken must be addressed.

b) Radio Management System (RMS), including the Radio Management Units (RMUs) and Tuning Backup Control Head. An understanding of all normal functions as well as backup and emergency functions of these systems is required.

c) Flight Guidance System including the Autopilot and Flight Director. An understanding of the various lateral and vertical modes and the ability to select and arm the modes during different phases of flight is essential.

d) Full Authority Digital Electronic Control (FADEC). An operational understanding of the FADEC and the engine thrust mode selection is required.

e) System control panels using pushbuttons with integral light bars. Pilots must have an understanding of the switch position and system configuration as it relates to whether the light bar is illuminated or not. This understanding is required for both normal and abnormal system operation. Pilots must be cognizant of switch normal or non-normal position as it relates to light bar illumination and not on whether the switch is depressed or released.

f) Bleed Air Thermal Anti-icing System. A thorough understanding of system operation, limitations, and procedures is needed.

g) Fuel System Configurations. Due to the increasing variety of fuel system configurations throughout the EMB-135/145 fleet, it is necessary that flight crews develop a thorough understanding of fuel system operations, limitations, and abnormal/normal procedures.

5.2.5 Features or Procedures Which Have Seat-Dependent Elements (as determined by each operator and POI). Accomplishment of certain tasks, procedures, or maneuvers require training of a crewmember for a particular crew duty position (e.g.. captain, first officer, check pilot). Training programs must recognize and address the necessary seat/duty position related tasks for the applicable crewmember. Accordingly, training programs must address seat-dependent tasks or maneuvers to the extent necessary to satisfy crew qualification objectives and duty position in accordance with ODR tables, when applicable. Consequently, any certificate holder allowing pilot crewmembers to occupy either pilot seat must include a training module which trains to proficiency the identified seat-dependent tasks. This module must also ensure the crewmember has sufficient time to develop the psychomotor acuity required to fly the aircraft from a seating position differing from the seat used in the qualification module. For the FSB report, seat-dependent tasks are defined as maneuvers or procedures using controls that are accessible or operable from only one flight crewmember seat, therefore in addition to operator specific crew duty position seat-dependent items, the following items have been identified as seat-dependent tasks for EMB-135/145 training:

a) Emergency manual gear extension for any right seat position training.

b) Main door alternate opening valve for any right seat position training.

c) Aircraft steering using the steering handle for any left seat position training.

5.2.6 Special Event Training. Special event training is recommended for the EMB-135/145. Such training must be conducted to improve basic crewmember understanding and confidence regarding aircraft handling qualities, options, and procedures as these relate to design characteristics and limitations. Examples of this training should include the following:

a) Upset Prevention and Recovery Training (UPRT)

b) Aircraft handling qualities and procedures during recovery from an upset condition (e.g., wake vortex encounter).

5.2.7 Controlled Flight Into Terrain (CFIT). Due to continued industry efforts to reduce exposure to CFIT accidents, special emphasis on this topic is appropriate. Emphasis on altitude awareness, GPWS warnings, situational awareness, and crew coordination is appropriate.

5.3 Differences Training – In Accordance With Pertinent 14 CFR

5.3.1 General. Unless an initial or transition program is completed for each related aircraft, differences training is necessary for each related aircraft or type, as provided in MDR and ODR tables. Detailed generic sample ODR tables may be obtained through the Seattle

AEG. Copies are available on request. These ODR tables are provided as generic, and therefore, may not include items that are applicable to particular operators.

a) A Differences Training Program prerequisite is that a trainee has completed initial, upgrade, or transition training in one related aircraft and will receive differences training for the other related aircraft.

b) When a Differences Training Program involves related aircraft having the same Pilot Type Rating, coverage of differences may be completed either coincident with each phase of an initial, upgrade, or transition training course, or following completion of that training course. The differences training must be consistent with the provisions of the approved applicable MDR/ODR Tables.

5.3.2 Differences Ground Training. Differences ground training is required on the topics applicable to the pertinent related aircraft and is shown by applicable ODR tables.

5.3.3 Differences Flight Training. Difference flight training is required in the topics and maneuvers applicable to the pertinent related aircraft that is shown by applicable ODR tables and in accordance with pertinent 14 CFR.

5.4 Recurrent Training:

5.4.1 Recurrent Ground Training. Courses must include appropriate training in accordance with pertinent 14 CFR for each related EMB-135/145 aircraft as specified by MDR and ODR tables for differences training.

5.4.2 Recurrent Flight Training. Courses require appropriate maneuvers and procedures identified and in accordance with pertinent 14 CFR or as otherwise described in this report. Maneuvers and procedures must account for differences between each related EMB-135/145 aircraft operated. The ODR table(s) must identify the differences.

5.4.3 Training program hours for Recurrent Training may be reduced in accordance with pertinent 14 CFR.

5.5 Operating Experience:

5.5.1 Operating Experience Pertinent to Each Flight Crewmember. Operating experience must be obtained while serving in a primary crew position.

5.5.2 Separate Operating Experience for Single Fleet Operations. Operating experience for the EMB-145 may be accomplished in any related EMB-135/145 aircraft.

5.5.3 Operating experience for Mixed Fleet Flying Operations. Credits towards pertinent 14 CFR requirements for operating experience, operating cycles, and line operating flight

time for consolidation of knowledge and skills may be permitted if performed in related EMB-135/145 aircraft.

5.5.4 Supervised Operating Experience (SOE). SOE required for a PIC Type Rating in accordance with pilot certification must be accomplished from the left pilot seat.

5.6 Other Training:

5.6.1 LOFT Programs. In accordance with pertinent 14 CFR, when operators have approved LOFT programs and several related EMB-135/145 aircraft, POIs must review LOFT credits to assure suitability for each related EMB-135/145 aircraft.

5.6.2 Instrument Approaches. When flight crews simultaneously qualify for use of CAT II and CAT III approaches, credit, as permitted by ODR tables, may apply.

Note: Operators must ensure that flight crews are familiar with appropriate use of the FCU and FMS, including modes to be used, for the types of instrument approaches to be flown, when using FLS methods in lieu of or in conjunction with NDB, VOR, localizer, or back course localizer procedures. This emphasis is also appropriate for aircraft that do not have certain navigation system sensors, such as ADF, installed.

5.6.3 Aircraft Dispatchers. Initial and transition training must be conducted in accordance with pertinent 14 CFR.

5.6.4 Flight Attendants. Initial and transition ground training must be conducted in accordance with pertinent 14 CFR. The objective of aircraft ground training is to provide flight attendants with an understanding of the EMB-135/145 aircraft. This knowledge is necessary for the flight attendant to perform the duties and procedures required in normal, abnormal, and emergency situations.

Aircraft ground training includes instruction in two distinct subject areas: EMB-135/145 general operational subjects training, and EMB-135/145 aircraft-specific emergency subjects training. Aircraft-specific emergency training is training on those items that are specific to the EMB-135/145 aircraft. An example of aircraft-specific emergency training is instruction on the location of emergency equipment for each related aircraft of the EMB-135/145 aircraft.

EMB-135/145 general operational subjects training consists of instruction in the general description of the aircraft, aircraft equipment, furnishings, and systems; routine crewmember communication and coordination procedures; routine crewmember duties and procedures during each phase of flight; and passenger handling responsibilities for EMB-135/145 aircraft.

As part of an approved training program, an operator may use many methods when conducting aircraft ground training, including classroom instruction, pictures, videotape, FSTDs, computer-based instruction, and static aircraft training.

Initial and Transition Ground Training must include a competence check to determine flight attendant ability to perform assigned duties and procedures on the EMB-135/145 aircraft. The competence check should cover each piece of emergency equipment and each emergency procedure unique to EMB-135/145 aircraft.

Training program hours for Initial Ground Training may be reduced as specified in accordance with pertinent 14 CFR. Specific design features of the EMB-135/145 aircraft, combined with the various types of operations to be conducted, should be considered when approving EMB-135/145 Transition Ground Training Programs.

6. FSB SPECIFICATIONS FOR CHECKING

6.1 General

6.1.1 14 CFR Part 121 Checking Items. Pertinent knowledge, procedures, and maneuvers specified by 14 CFR Part 61, FAA Practical Test Standards (PTS), and 14 CFR Part 121, Appendix F.

6.1.2 14 CFR Parts 61 and 135 Checking Items. Testing, Checking, and Evaluations specified by 14 CFR Parts 61 and 135, and FAA Practical Test Standards (PTS).

6.1.3 Areas of emphasis. The following areas of emphasis should be addressed during checks as necessary:

a) Proficiency with manual and automatic flight must be demonstrated.

b) Proper selection and use of PFD/MFD displays, raw data, flight director, and Flight Guidance System modes should be demonstrated, particularly during instrument approaches.

c) Demonstration of FMS navigation (departures and arrivals) proficiency.

d) Proper outside visual scan without prolonged fixation on FMS operation should be demonstrated, and failure of component(s) of the FMS should be addressed.

6.1.4 No Flap Landings. Demonstration of a No Flap approach and landing during a check is appropriate. In accordance with FAA Order 8900.1, when the flight test is conducted in the airplane in actual flight, a touchdown from a no flap is not required. The approach must be flown to the point where the inspector or examiner can determine whether the landing would or would not occur in the touchdown zone.

6.2 Type Ratings

6.2.1 Practical Tests. Practical tests must follow standard provisions in accordance with pertinent 14 CFR. The satisfactory completion of a practical type rating evaluation in any EMB-135/145 must meet the requirement for the EMB-145 type rating. In order to operate another related aircraft, crewmembers operating under provisions of pertinent 14 CFR are required to satisfactorily comply with the requirements of the MDR and ODR tables in Appendices 1 and 2.

6.2.1.1 Unique Training Provisions. All existing training requirements of 14 CFR part 121, Appendix E, are applicable to the EMB-145, except as follows:

a) Tuck and Mach buffet: Demonstration of the aircraft's over speed protection capabilities is an acceptable substitute.

b) Turns with and without spoilers: Not applicable to the EMB-145, no substitute available.

c) Fuel Jettisoning: Not applicable to the EMB-145, no substitute available.

d) Operation of systems and controls at the flight engineer station: Not applicable to the EMB-145, no substitute available.

6.2.2 Application For and Issuance of Type Ratings. Airmen completing pertinent requirements in accordance with pertinent 14 CFR in either an EMB-135 or EMB-145 in accordance with FSB requirements described in this report may apply to the FAA for the EMB-145 type rating endorsement.

6.3 Proficiency Checks

6.3.1 General. Proficiency Checks are administered in accordance with pertinent 14 CFR for the EMB-145. A proficiency check in either the EMB-135 or EMB-145 suffices for the type, if initial and recurrent qualification is conducted in accordance with MDR and operator approved ODR tables for that operator. These checks must be administered by an authorized designee, check pilot, or FAA Aviation Safety Inspector. Satisfactory completion of a proficiency check may be substituted for recurrent flight training as permitted in accordance with pertinent 14 CFR.

7. FSB SPECIFICATIONS FOR RECENCY OF EXPERIENCE

7.1 Requirements for recency of experience must be in accordance with pertinent 14 CFR and each aircraft type is also addressed separately in this report.

7.1.1 Takeoff and landing credit is permitted. Takeoffs and landings performed in one related aircraft may be equivalent to those performed in the other related aircraft. Recency of

experience must include operation/programming of the FMS, FCU, and ECAM for both arrival and departure.

7.2 Currency for Mixed Fleet Flying Operations. These are shown in MDR/ODR tables.

8. AIRCRAFT REGULATORY COMPLIANCE CHECKLIST

8.1 Compliance Checklist (see Appendix 4).

Compliance checklists are provided as an aid to FAA Certificate Holding District Offices (CHDO) in identifying those specific rules or policies for which compliance has already been demonstrated to the FAA for aircraft having a particular aircraft type certificate. The checklist also notes rules or policies not demonstrated to the FSB, which must be demonstrated to CHDOs by operators.

8.2 Discussion of Specific Compliance Checklist Items

8.2.1 EMB-145 Observer Seat. On EMB-135/145 aircraft, the observer seat complies with the requirements of 14 CFR Part 121.

8.2.2 Emergency Evacuation.

a) EMB-145. The EMB-145 has successfully been demonstrated in accordance with pertinent 14 CFR for configurations and passenger capacities up to 50 passengers with a minimum of one Flight Attendant. A full scale evacuation is not necessary consistent with aircraft certification accomplished under 14 CFR Part 25 using certification by analysis. Passenger capacity less than or equal to the demonstrated capacity may be authorized. A partial-evacuation for the EMB-145 is required unless the particular certificate holder has previously operated a EMB-145 with the same or similar interior and exit configuration.

b) EMB-135ER/LR/BJ. Neither a full scale or partial evacuation is required for the EMB-135ER/LR as it is configured for 37 passengers maximum or the EMB-135BJ as it is configured for 15 passengers maximum, which is less than the 44 passenger seating capacity which drives the requirement for a demonstration.

c) EMB-135KE/KL. The EMB-135KE/KL is configured for 44 passengers maximum. The EMB-145 has successfully been demonstrated under § 121.291 for configurations and passenger capacities up to 50 passengers with a minimum of one Flight Attendant. Accordingly, an additional § 121.291 full scale evacuation is not necessary for the EMB-135KE/KL aircraft. Passenger capacity less than or equal to the demonstrated capacity may be authorized.

8.2.3 Proving Tests, § 121.163. Initial part 121 proving tests in accordance with provisions of § 121.163 (a) for the EMB-145 are based on an approved program completed by Continental Express. The EMB-135 is considered a variations of the EMB-145 which has not been materially altered. Further demonstration under § 121.163 (a) is not necessary for the EMB-135.

Proving tests in accordance with § 121.163 (b) are appropriate in accordance with FAA Order 8900.1, when the EMB-135 or EMB-145 is new to a particular operator. When an operator is currently operating either the EMB-135 or EMB-145 and it adds the other variations of aircraft in the same kind of operation, proving tests are not required. Proving test requirements and reductions are as designated by FAA Order 8900.1 and the CHDO, or as otherwise specified by the FSB or AFS-200.

9. FSB SPECIFICATIONS FOR FLIGHT TRAINING DEVICES AND FULL FLIGHT SIMULATORS (FSTDs)

9.1 Flight Training Device And Full Flight Simulator Characteristics. Flight training device (FTD) and full flight simulator (FFS) characteristics pertinent to the EMB-145 are as specified by 14 CFR § 121.407, 14 CFR part 121, Appendix H, and 14 CFR Part 60, except as described below.

9.2 Use of FTDs for Specific Check/Evaluation Items. Certain ATP, type rating, or proficiency check/evaluation items may be completed in FAA qualified FTDs. Specific checking credit in such instances must be in accordance with pertinent 14 CFR and approved by the POI or TCPM.

9.3 FFS & FTD Compatibility (Ref 14 CFR § 121.407). When variations are flown in mixed fleets, the combination of FFS and FTDs used to satisfy MDR or ODR provisions must match specific variations flown by that operator. The acceptability of differences between FTDs, FFS, and aircraft operated must be addressed by the POI or TCPM.

9.4 Flight Simulator Training Device (FSTD) Approval. Requests for device approval must be made to the POI or TCPM. If device characteristics clearly meet established FAA criteria and are qualified, the POI or TCPM may approve those devices for that carrier. Where devices do not clearly satisfy a given level, POI or TCPM should request advice from the FSB Chairman, National Simulator Program (NSP), or AFS-200.

9.5 Door Training. Training in accordance with pertinent 14 CFR must be conducted on an aircraft, FSTD, or a ground Training Device representative of the operators fleet configuration.

10. APPLICATION OF FSB REPORT

10.1 Relevant parts of this report (e.g., Type Rating Designation, checking maneuvers) are effective when the report is approved by the FAA.

11. ALTERNATE MEANS OF COMPLIANCE

11.1 Approval Level and Approval Criteria. Alternate means of compliance to differences requirements in accordance with pertinent 14 CFR for mixed fleet operations, other than as specified in provisions of this report, must be approved by the Flight Standards, Air Transportation Division (AFS-200). If alternate means of compliance is sought, operators will be required to establish that the proposed alternate provides an equivalent level of safety to the provisions of AC 120-53, as amended, and this FSB report and complies with pertinent 14 CFR. Analysis, demonstrations, proof of concept testing, differences documentation, or other evidence may be required.

11.2 Equivalent Safety. In the event alternate means of compliance is sought, training program hour reductions, simulator approvals, and device approvals may be significantly limited and reporting requirements may be increased to assure equivalent safety. AFS-200 will generally not consider relief by alternate means of compliance unless sufficient lead time has been planned by an operator to allow for any necessary testing and evaluation.

11.3 Interim Programs. In the event unforeseen circumstances make it impossible for an operator to comply with MDR provisions, the operator may seek interim program approval rather than a permanent, alternate compliance method. Financial arrangements, scheduling adjustments, and similar justifications are not considered to be “unforeseen circumstances” for the purposes of this provision.

APPENDIX 1

MASTER DIFFERENCE REQUIREMENTS (MDR) TABLE

Master Differences Requirements Table

Type Rating: EMB-145		From EMB-145	From EMB-135KE/KL	From EMB-135ER/LR/BJ
To	EMB-145	Not Applicable	A/A/A	A/A/A
To	EMB-135KE/KL	A/A/A	Not Applicable	A/A/A
To	EMB-135ER/LR/BJ	A/A/A	A/A/A	Not Applicable

Notes: (Applicable to EMB-135/145):

(1) Training for Integrated Standby Instrument System (ISIS) may be satisfied with "A" level training.

(2) Training for FMS 6.1 will be satisfied with "D" level training. All aspects of this avionics upgrade must be trained regardless of which individual optional elements are purchased or installed. See ODR table, System 34, Navigation, for each FMS 6.1 component training requirement.

APPENDIX 2
ACCEPTABLE OPERATOR DIFFERENCE REQUIREMENTS (ODR) TABLES

(Available upon request from SEA-AEG)

APPENDIX 3
ACCEPTABLE DIFFERENCES TRAINING PROGRAM FOR A MIXED EMB-135/145 FLEET

(Reserved)

APPENDIX 4
AIRCRAFT COMPLIANCE CHECKLIST

14 CFR part 91
General Operating and Flight Rules – Compliance Checklist EMB-135BJ Only
(Available upon request from SEA-AEG)
and
14 CFR part 135
Operating Requirements: Commuter and On Demand
Operations and Rules Governing Persons on Board such Aircraft – Compliance Checklist EMB-135BJ Only
(Available upon request from SEA-AEG)